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GEOGRAPHICAL WORK IN CANADA, 1896.

BY

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Progress made in geographical exploration of the less known parts of Canada during 1896 has resulted chiefly from the work carried out in three different and widely separated tracts, by Messrs. Tyrrell, Bell and Low, of the Geological Survey.

North of Lake Winnipeg, between Nelson and Churchill rivers, is an area of rather more than 25,000 square miles, chiefly drained by Grass and Burntwood rivers, which lies aside from the ordinary lines of travel, and consequently remained almost unknown. Mr. J. B. Tyrrell spent the past summer in this district, during which time he made surveys of the greater part of Grass River, with the lakes into which it expands; of the middle portion of Burntwood River, and of a number of other lakes and smaller streams, covering in all about 1,100 miles.

The existence at the head of Grass River of a large area of Huronian schists and conglomerates, broken by igneous intrusions and cut by many quartz veins, which may contain ores of the precious metals, was determined, and the extent of the area in three directions was roughly outlined.

Among the interesting results of the exploration is the discovery that the stratified alluvial or lacustrine clays that underlie the fertile valley of Red River extend north of Lake Winnipeg and west of Nelson River, in a belt from fifty to seventy miles wide, at least as far north as North Latitude 56°.

In the basin of the Nottaway River, lying between the sources of the Ottawa and James Bay, Dr. R. Bell continued his exploratory work of 1895. This stream, fed by numerous large branches, is described as discharging to the north a great volume of water. Not only is its drainage area very considerable, but the rainfall of the region is exceptionally heavy. The surveys of the past year were directed to the tributary streams and to a route known to the Hudson's Bay Company, running northward from Waswanipi Lake to the Rupert River, and crossing the valley of the Little Nottaway or Broad-back River, which flows into James Bay, between the Nottaway and the Rupert. Mr. R. W. Brock, who assisted Dr. Bell, independently explored the upper part of the Mekiskan Branch and

Waswanipi River, and by the last-named stream eventually reached Mistassini Lake to the eastward. Much of the Nottaway basin possesses a good soil, which may one day be utilized for agricultural purposes, and the definition of a wide and long belt of rocks of the Huronian system leads to the belief that important discoveries of metalliferous deposits like those of Sudbury, Lake of the Woods and Rainy Lake are possible.

Mr. A. P. Low, during the summer of 1896, was engaged in an exploration of a route across the northern portion of the Labrador Peninsula, extending from Richmond Gulf, on the east coast of Hudson Bay, to the mouth of the Koksoak River, on Ungava Bay. In order to reach the starting point of the exploration he descended to Moose Factory from the Canadian Pacific Railway by the Missinaibie Branch of the Moose River. From Moose Factory the foot of James Bay was crossed and the east coast was followed northward about 500 miles, a large open boat being used for this part of the journey. The boat was left at Richmond Gulf and the party passed inland in two wooden canoes. The route followed soon rose to the level of the table-land, about 800 feet above sea-level, and passed eastward 75 miles, through small lakes and rivers, surrounded by low semi-barren hills, to Clearwater Lake. This lake was explored and found to be about 45 miles long and 25 miles across in the widest part, and is dotted with numerous islands. From Clearwater Lake a short portage-route was followed to Seal Lake, which was found to be more than 50 miles long and from one to five miles wide. Seal Lake is but a short distance from the water-shed between the rivers flowing into Hudson Bay and those of Ungava Bay. Having crossed the height-of-land at an elevation of about 900 feet, the Stillwater Branch of the Koksoak River was descended 275 miles to its mouth. For the first six miles the river is small and almost a continuous rapid, after which it is easily navigable with canoes. From Fort Chimo at its mouth the H. B. Co.'s ship was taken to Rigolet, whence the party reached Quebec in a schooner. Among the results of the exploration may be mentioned the micrometer survey of the route followed, and a knowledge of the character of the surrounding country, which throughout is a rolling plateau broken by rocky ridges, with stunted trees confined to the valleys, the higher parts being without wood.

Work has also been continued by the Geological Survey during the year, upon the areas covered by a number of sheets of the Geological map, chiefly in Nova Scotia, Ontario and British Columbia.

Mr. W. Ogilvie, of the Topographical Surveys Branch, Depart-

ment of Interior, spent the winter of 1895-96, as well as the past summer, in the Yukon District of the North-West Territory. As he has not yet returned, no details of his work are available, but much of his time was given to a preliminary delineation of the line of the 141st meridian, constituting the treaty boundary between Alaska and that part of Canada. The definition of this north-and-south line is important, because of the developments in alluvial gold mining going on in its vicinity; but any surveys made of it without the co-operation of the United States are, of course, not authoritative or final. The definition of the line here is, however, purely an astronomical and geodetic question, about which no difficulty whatever can arise when concurrent work is entered upon by the two interested Governments.

Surveys for the purpose of ascertaining the conditions in respect to irrigation have been continued in Western Alberta, on the same plan and on about an equal scale to those of the year 1895, for which a detailed report with numerous maps is already available.

The Survey of Tides and Currents in Canadian waters, under the Department of Marine and Fisheries, has been continued by Mr. W. Bell Dawson. Seven principal tide-gauges are now established on the Atlantic coast. Tide tables have been issued for Halifax and Quebec, and observations for the extension of tidal differences to other points are in progress. Surveys of Currents have been directed to the Gulf of St. Lawrence and its approaches.